

Application No. 10/765,437
Amendment dated May 9, 2006
After Final Office Action of March 10, 2006

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AMENDMENTS TO THE CLAIMS

Claim 1—Claim 28 (Canceled):

Claim 29 (Previously presented): A weight-controlled vehicle, comprising:

a rider support for carrying a rider,
at least three wheels mounted below said rider support for carrying
said rider support and for enabling said vehicle to roll when placed
upon a riding surface,
said wheels being spaced to stably support said vehicle and normally
prevent said vehicle from tipping when placed upon said riding
surface,
a motor and a power transmission for rotating at least one of said
wheels for propelling said vehicle along said riding surface,
a speed control coupling attaching said rider support to lower
components of said vehicle and arranged to enable said rider support
to tilt relative to said lower components, such tilting occurring in a
generally forward or backward direction,
a speed control for enabling said rider to control the rolling speed of
said vehicle in response to said forward or backward tilting of said
rider support,
a steering control for enabling said rider to tilt said rider support in a
generally side-to-side direction and in response to such tilting, steer
said vehicle to the side in which said rider support is tilted when said
vehicle rolls upon said riding surface,
said rider support having an upward facing surface of a size and
shape predetermined to enable operation of said vehicle by a rider
situated upon said rider support in a standing, sitting, or kneeling
riding position,
said upward facing surface being generally free of upwardly extending

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protrusions which would otherwise substantially inhibit said rider from operating said vehicle in any of said riding positions, whereby said rider may control the rolling speed and steered direction of said vehicle by appropriate tilting of said rider support when said rider is situated upon said rider support in any of said riding positions.

Claim 30 (Previously presented): The vehicle of claim 29 wherein said speed control includes:

a rolling direction reverser for enabling said motor to propel said vehicle forward when said rider support is tilted into the forward range of its tilting motion and backward when said rider support is tilted into the rearward range of its tilting motion, whereby the direction that said vehicle rolls may be reversed in response to said forward or backward tilting of said rider support.

Claim 31 (Canceled):

Claim 32 (Previously presented): The vehicle of claim 29, further including:

at least one handlebar for stabilizing said rider while said rider is situated on said rider support, said handlebar being removable from said vehicle for enabling said rider to operate said vehicle with hands free and to operate and store said vehicle with reduced encumbrance from said handlebar.

Claim 33 (Previously presented): The vehicle of claim 29, further including:

at least one handlebar for stabilizing said rider while said rider is situated on said rider support, and a clamping articulation for tucking said handlebar to a lower, less obtrusive position for enabling said rider to operate said vehicle with hands free and to operate and store said vehicle with reduced encumbrance from said handlebar.

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Claim 34 (Previously presented): The vehicle of claim 29, further including:
a steerable truck attached below said rider support by a steering union
for enabling said steerable truck to pivot along a steering axis,
at least two of said wheels being truck wheels rotatably attached to the
left and right extremities of said steerable truck and spaced to
normally prevent said vehicle from tipping in a side-to-side direction,
said steering axis generally falling within a left-right facing plane and
also being substantially inclined to translate said side-to-side tilting of
said rider support into appropriate left or right turning motion of said
steerable truck for causing said truck wheels to steer said vehicle to
the left or right in response to said side-to-side tilting of said rider
support,
at least one said remaining wheel being a drive wheel rotationally
coupled to said motor by said power transmission for propelling said
vehicle along said riding surface,
said drive wheel being located substantially in front or behind said
truck wheels to prevent said vehicle from tipping in a front-to-back
direction.

Claim 35 (Previously presented): The vehicle of claim 29 wherein at least one
of said wheels is a drive wheel, and further including:
a steerable truck attached below said rider support by a steering union
for enabling said steerable truck to turn to the left or right,
a steering linkage coupling said rider support to said steerable truck
for turning said steerable truck to the left or right in response to said
side-to-side tilting of said rider support,
said drive wheel being mounted to said steerable truck for steering
said vehicle to the left or right when said steerable truck turns to the
left or right in response to said side-to-side tilting of said rider support,

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said motor also being mounted to said steerable truck and rotationally coupled to said drive wheel for propelling said vehicle along said riding surface.

Claim 36 (Previously presented): The vehicle of claim 29, further including:

a steering biasing spring constrained to deform when said rider support is tilted in said side-to-side direction, whereby said steering biasing spring's resistance to deformation biases said vehicle to roll in a generally straight line in the absence of said side-to-side tilting of said rider support, and

a throttle biasing spring constrained to deform when said rider support is tilted in said forward or backward direction, whereby said throttle biasing spring's resistance to deformation biases said vehicle to cease rolling in the absence of said forward or backward tilting of said rider support.

Claim 37 (Previously presented): A weight-controlled vehicle, comprising:

a rider support for carrying a rider,

at least three wheels mounted below said rider support for carrying said rider support and for enabling said vehicle to roll when placed upon a riding surface,

said wheels being spaced to stably support said vehicle and normally prevent said vehicle from tipping when placed upon said riding surface,

a motor and a power transmission for rotating at least one of said wheels and for propelling said vehicle along said riding surface,

a speed control coupling attaching said rider support to lower components of said vehicle and arranged to enable said rider support to tilt relative to said lower components, such tilting occurring in a generally forward or backward direction,

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a speed control for enabling said rider to control the rolling speed of said vehicle in response to said forward or backward tilting of said rider support,
a steering control for enabling said rider to tilt said rider support in a generally side-to-side direction and in response to such tilting, steer said vehicle to the side in which said rider support is tilted when said vehicle rolls upon said riding surface,
said rider support having a seat upon which a rider may sit while operating said vehicle,
whereby said rider may control the rolling speed and steered direction of said vehicle by appropriate tilting of said rider support when said rider is seated in said seat upon said rider support.

Claim 38 (Previously presented): The vehicle of claim 37 wherein said speed control includes:

a rolling direction reverser for enabling said motor to propel said vehicle forward when said rider support is tilted into the forward range of its tilting motion and backward when said rider support is tilted into the rearward range of its tilting motion,
whereby the direction that said vehicle rolls may be reversed in response to said forward or backward tilting of said rider support.

Claim 39 (Previously presented): The vehicle of claim 37, further including:

at least one handlebar for stabilizing said rider while said rider is situated on said rider support,
said handlebar being removable from said vehicle for enabling said rider to operate said vehicle with hands free and to operate and store said vehicle with reduced encumbrance from said handlebar.

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Claim 40 (Previously presented): The vehicle of claim 37, further including:

at least one handlebar for stabilizing said rider while said rider is situated on said rider support, and
a clamping articulation for tucking said handlebar to a lower, less obtrusive position for enabling said rider to operate said vehicle with hands free and to operate and store said vehicle with reduced encumbrance from said handlebar.

Claim 41 (Previously presented): A weight-controlled vehicle, comprising:

rider support means for supporting the body of a rider,
at least three wheels enabling said vehicle to roll when placed upon a riding surface,
said wheels being spaced to stably support said vehicle and normally prevent said vehicle from tipping when placed upon said riding surface,
propulsion means for propelling said vehicle along said riding surface,
speed control attaching means for attaching said rider support means to lower components of said vehicle and arranged to enable said rider support means to tilt relative to said lower components, such tilting occurring in a generally forward or backward direction,
speed control means for enabling said rider to control the rolling speed of said vehicle in response to said forward or backward tilting of said rider support means,
steering control tilting means for enabling said rider to tilt said rider support means in a generally side-to-side direction and in response to such tilting, steer said vehicle to the side in which said rider support means is tilted when said vehicle rolls upon said riding surface,
said rider support means having an upward facing area of an appropriate size and shape to enable operation of said vehicle by a

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rider situated upon said rider support means in a standing, sitting, or kneeling riding position,
said upward facing area being generally free of upwardly extending protrusions which would otherwise substantially inhibit said rider from operating said vehicle in any of said riding positions,
whereby said rider may control the rolling speed and steered direction of said vehicle by appropriate tilting of said rider support means when said rider is situated upon said rider support means in any of said riding positions.

Claim 42 (Previously presented): The vehicle of claim 41 wherein said speed control means includes:

a rolling direction reversing means for enabling said propulsion means to propel said vehicle forward when said rider support means is tilted into the forward range of its tilting motion and backward when said rider support means is tilted into the rearward range of its tilting motion,
whereby the direction that said vehicle rolls may be reversed in response to said forward or backward tilting of said rider support means.

Claim 43 (Canceled):

Claim 44 (Previously presented): The vehicle of claim 41, further including:
an upwardly extending support means with at least one hand grip area for said rider to hold on to and for facilitating the balance of said rider while said rider is situated on said rider support means,
said upwardly extending support means being removable from said vehicle for enabling said rider to optionally operate said vehicle with

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hands free and to operate and store said vehicle with reduced encumbrance from said upwardly extending support means.

Claim 45 (Previously presented): The vehicle of claim 41, further including:
an upwardly extending support means with at least one hand grip area for said rider to hold on to and for facilitating the balance of said rider while said rider is situated on said rider support means,
a clamping articulation means for tucking said upwardly extending support means to a lower, less obtrusive position and for enabling said rider to operate said vehicle with hands free and to operate and store said vehicle with reduced encumbrance from said upwardly extending support means.

Claim 46 (Previously presented): The vehicle of claim 41, further including:
a steerable wheel mounting means attached below said rider support means by a steering union means for enabling said steerable wheel mounting means to pivot along a steering axis,
at least two of said wheels being truck wheels rotatably attached to the left and right extremities of said steerable wheel mounting means and spaced to normally prevent said vehicle from tipping in a side-to-side direction,
said steering axis generally falling within a left-right facing plane and also being substantially inclined to translate said side-to-side tilting of said rider support means into appropriate left or right turning motion of said steerable wheel mounting means for causing said truck wheels to steer said vehicle to the left or right in response to said side-to-side tilting of said rider support means,
at least one said remaining wheel being a drive wheel rotationally coupled to said propulsion means for propelling said vehicle along said riding surface,

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said drive wheel being located substantially in front or behind said truck wheels to prevent said vehicle from tipping in a front-to-back direction.

Claim 47 (Previously presented): The vehicle of claim 41 wherein at least one of said wheels is a drive wheel and further including:
a steerable wheel mounting means attached below said rider support means by a steering union means for enabling said steerable wheel mounting means to turn to the left or right,
a steering linking means coupling said rider support means to said steerable wheel mounting means for turning said steerable wheel mounting means to the left or right in response to said side-to-side tilting of said rider support means,
said drive wheel being mounted to said steerable wheel mounting means for steering said vehicle to the left or right when said steerable wheel mounting means turns to the left or right in response to said side-to-side tilting of said rider support means,
said propulsion means also being mounted to said steerable wheel mounting means and rotationally coupled to said drive wheel for propelling said vehicle along said riding surface.

Claim 48 (Previously presented): The vehicle of claim 41, further including:
steering biasing means for causing said vehicle to roll in a generally straight line in the absence of said side-to-side tilting of said rider support means, and
throttle biasing means for causing said vehicle to cease rolling in the absence of said forward or backward tilting of said rider support means.

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Claim 49 (New): An apparatus comprising:

a plurality of at least three motive structures contacting a surface with
said motive structures disposed in a non-linear arrangement;

a motive source, coupled to at least one motive structure, for moving
said at least one motive structure to translate the apparatus in both a
first direction over said surface and in a directly opposed second
direction over said surface;

a steering control for setting said first direction; and

a rider platform, pivotally coupled to said motive structures and having
at least two orthogonal axes of motion relative to said motive
structures including a pitch attitude and a roll attitude wherein said
steering control is responsive to said roll attitude and wherein said
motive source is responsive to said pitch attitude.

Claim 50 (New): The apparatus of claim 49 wherein said non-linear
arrangement includes generally an isosceles triangle having three
vertices with one of said motive structures at each said vertex.

Claim 51 (New): The apparatus of claim 50 wherein said triangle includes a
first side and a second side of equal length to said first side with a
particular one vertex at a point of intersection of said first side and
second side wherein said motive structure at said particular one vertex
coupled to said steering control effects said first direction.

Claim 52 (New): The apparatus of claim 51 wherein said motive structure at
said particular one vertex rotates about an axis perpendicular to said
first direction when moving in said first direction and wherein said
steering control rotates said axis relative to said rider platform to effect
said first direction.

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Claim 53 (New): An apparatus, comprising:

no more than three wheels contacting a surface with said wheels disposed in a triangular arrangement having a particular one vertex of said triangular arrangement being a forward-most vertex and a particular one wheel located at said forward-most vertex being a steering wheel;

a motive source, coupled to at least one wheel, for moving the apparatus in both a first direction over said surface and in a directly opposed second direction over said surface by rotating said at least one wheel in a first rotation for said first direction and rotating said at least one wheel in a second rotation for said second direction;
a steering control, coupled to said steering wheel, for setting said first direction; and

a generally planar rider platform, pivotally coupled to said motive structures and extending an entire length of the apparatus, said rider platform having at least two orthogonal axes of motion relative to said wheels including a pitch attitude and a roll attitude wherein said steering control is responsive to said roll attitude to set said first direction and said second direction and wherein said motive source is responsive to said pitch attitude to move the apparatus forward in said first direction and backward in said second direction with a forward velocity and a backward velocity responsive to a magnitude of pitch deviation from a neutral position.

Claim 54 (New): A method of operating an apparatus, the method comprising:

a) pitching a rider platform forward from a neutral position to a forward pitched angle, said rider platform pivotably coupled to a plurality of structures supporting said rider platform above a surface wherein a

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forward speed of the rider platform in a forward direction over said surface is directly related to a magnitude of said forward pitched angle; and

b) pitching said rider platform backward from said neutral position to a backward pitched angle wherein a backward speed of said rider platform in a backward direction over said surface is directly related to a magnitude of said backward pitched angle; and

c) rolling said rider platform to starboard from said neutral position to a starboard pitched angle wherein a starboard turning rate of said forward direction and a port turning rate of said backward direction are directly related to a magnitude of said starboard pitched angle; and

d) rolling said rider platform to port from said neutral position to a port pitched angle wherein said port turning rate of said forward direction and said starboard turning rate of said backward direction are directly related to a magnitude of said port pitched angle and wherein said rider platform is biased to said neutral position with said neutral position producing zero for said forward speed, said backward speed, said starboard turning rate and said port turning rate.

Claim 55 (New): A method of using a vehicle for carrying a person, the method comprising:

a) assuming a position on a platform that supports the person, said platform biased to a neutral position and moveably mounted relative to a motive system including a motorized drive that propels said platform over an underlying surface through motion of at least one ground-contacting member of said motive system; and

b) pitching said platform from said neutral position to variably control both a forward speed and a backward speed of said platform over said underlying surface directly responsive to a magnitude of a pitch angle

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of said platform relative to said motive system; and
c) rolling said platform from said neutral position to variably control
both a starboard turning rate and a port turning rate of said platform as
it moves at said forward speed and said backward speed, said turning
rates directly responsive to a magnitude of a roll angle of said platform
relative to said motive system.